IN THE CLAIMS:

This listing of claims will replace all prior versions, and listings, of claims in the present patent application.

1. (Currently Amended) A method ~~of improving modulation transfer function through scanning a scan object with a stagger sensor, wherein the stagger sensor includes a plurality of sensing modules~~, ~~the method~~ comprising:

scanning an object using a stagger sensor;

retrieving reference digital data; and

calculating a computed pixel value using at least in part the retrieved reference digital data and data captured by the scanning operation.

~~processing captured digital data of computed pixel after a scanning of the scan object.~~

2. (Currently Amended) The method of claim 1, wherein scanning an object using a stagger sensor comprises scanning the object using a stagger sensor including a plurality of scanning modules, the plurality of scanning modules including ~~each sensing module includes~~ a plurality of light-sensing cells ~~and each light-sensing cell is capable of scanning a plurality of computed pixels~~.

3. (Currently Amended) The method of claim 2, wherein ~~processing the captured digital data~~ calculating a computed pixel value further includes: if a first light-sensing cell of a first sensing module ~~contains~~ includes a reference digital data and a second light-sensing cell of a second sensing module and the first light-sensing cell ~~has~~ having some overlapping in a forward scanning direction, digital data of ~~the computed~~ a pixel in the region in the second light-sensing cell having substantially no overlapping with the first light-sensing cell is obtained

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substantially in accordance with the following relationship ~~using a formula:~~

$A(X)=F(X)*N-A(X-1)-A(X-2)-\ldots-A(0)*(N-X)$~~; and if a first light-sensing cell of a first sensing module contains no reference digital data and a second light-sensing cell of a second sensing module and the first light-sensing cell has some overlapping in the forward scanning direction, the digital data of the computed pixel scanned by the second light-sensing cell having no overlapping with the first light-sensing cell is obtained using a formula:~~

~~$A(X)=F(X)*N-A(X-1)-A(X-2)-\ldots-A(X-N+1)$~~, where X ~~is~~ comprises a desired ~~computed~~ pixel, N ~~is~~ comprises a number of ~~computed~~ pixels included in a light-sensing cell, A(X) ~~is~~ comprises digital data corresponding to an X^{th} ~~computed~~ pixel, A(1) ~~is~~ comprises digital data of the first ~~computed~~ pixel, and F(X) ~~is~~ comprises digital data ~~obtained after a~~ captured during the scanning operation including ~~computed~~ pixels captured by the light-sensing cell.

4. (Currently Amended) The method of claim 3, wherein ~~the~~ digital data in the overlapping region between the second light-sensing cell and the first light-sensing cell ~~contains~~ includes substantially identical digital data.

5. (Currently Amended) The method of claim 1, wherein ~~the~~ reference digital data includes digital data obtained from ~~unused~~ light-sensing cells in the sensing module.

6. (Currently Amended) The method of claim 1, wherein ~~the~~ a sensing module inside the stagger sensor has a slight shift in position relative to another sensing module ~~each other~~.

7. (Currently Amended) The method of claim 1, wherein the stagger sensor ~~corresponding to a sense primary color has~~ includes sensing modules positioned substantially in parallel to ~~a long~~ an axis, wherein ~~each~~ a first sensing module ~~has~~ includes a first light-sensing

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cell ~~of a first sensing module~~ and a second sensing module includes a second light-sensing cell ~~of a second sensing module, both~~ , the first and second light-sensing cells having a first end ~~on a vertical line in an identical~~ at a first position along the ~~long~~ axis ~~but each has a second end on a vertical line in~~ and the first sensing module having second end at a different position along the ~~long~~ axis than a second end of the second sensing module.

8. (Currently Amended) A method of improving modulation transfer function through scanning a scan object with a stagger sensor, wherein the stagger sensor includes a plurality of sensing modules, a first light-sensing cell of a first sensing module and a second light-sensing cell of a second sensing module ~~have~~ having a first end on ~~a vertical line~~ in substantially the same position along the ~~long~~ axis ~~but~~ wherein ~~each~~ the first light-sensing cell has a second end ~~on a vertical line~~ in a different position along the ~~long~~ axis than a second end of the second light-sensing cell, the method comprising:

obtaining digital data of a first ~~computed~~ pixel using a difference in scanning region between the first light-sensing cell and the second light-sensing cell; and

processing ~~the~~ digital data of a plurality of subsequent~~ly~~ ~~computed~~ pixels after a scanning of the scan object according to the digital data of the first ~~computed~~ pixel.

9. (Currently Amended) The method of claim 8, wherein ~~each~~ the first and second light-sensing cells are ~~is~~ capable of scanning a plurality of ~~computed~~ pixels.

10. (Currently Amended) The method of claim 9, wherein processing ~~the~~ digital data of subsequent~~ly computed~~ pixels further includes: ~~when~~ if the second light-sensing cell and the first light-sensing cell have an overlapping region in a forward scanning direction, digital data of the ~~computed~~ pixel scanned by the second light-sensing cell having substantially no

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overlapping with the first light-sensing cell are obtained substantially in accordance with the following relationship ~~through a formula~~: A(X) F(X)*N−A(X−1)−A(X−2)− . . . −A(X−N+1), where X ~~is~~ a desired ~~computed~~ pixel, N ~~is~~ comprises a number of ~~computed~~ pixels included in a light-sensing cell, A(X) ~~is~~ comprises digital data corresponding to an X^{th} ~~computed~~ pixel, A(1) ~~is~~ comprises digital data of the first ~~computed~~ pixel, and F(X) is digital data obtained by scanning using light-sensing cells ~~included in capturing the computed pixels~~.

11. (Currently Amended) The method of claim 10, wherein ~~the~~ digital data in the overlapping region between the second light-sensing cell and the first light-sensing cell ~~contains~~ includes substantially identical digital data.

12. (Currently Amended) A stagger sensor ~~for improving modulation transfer function, wherein the stagger sensor corresponding to a sense primary color has~~ , comprising sensing modules positioned substantially in parallel to ~~a long~~ an axis, wherein a first light-sensing cell of a first sensing module and a second light-sensing cell of a second sensing module both ~~have~~ include a first end ~~on a vertical line~~ in substantially the same position along the ~~long~~ axis ~~but each~~ and wherein the first light-sensing cell has a second end ~~on a vertical line~~ in a different position along the ~~long~~ axis than a second end of the second light-sensing cell.

13. (Currently Amended) The stagger sensor of claim 12, wherein the first light-sensing cell ~~has~~ includes a ~~vertical~~ width along the ~~long~~ axis greater than any other light-sensing cell in the first sensing module.

14. (Currently Amended) The stagger sensor of claim 12, wherein the first light-sensing cell ~~has~~ includes a ~~vertical~~ width along the ~~long~~ axis smaller than any other light-

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sensing cell in the first sensing module.

15. (Original) The stagger sensor of claim 14, wherein the first light-sensing cell includes a plurality of scanning spaces.

16. (New) The method of claim 2, wherein calculating a computed pixel value further includes: if a first light-sensing cell of a first sensing module includes no reference digital data and a second light-sensing cell of a second sensing module and the first light-sensing cell has some overlapping in a forward scanning direction, the digital data of the pixel scanned by the second light-sensing cell including substantially no overlap with the first light-sensing cell is obtained substantially in accordance with the following relationship:
$A(X)=F(X)*N-A(X-1)-A(X-2)- \ldots -A(X-N+1)$, where X comprises a desired pixel, N comprises a number of pixels included in a light-sensing cell, A(X) comprises digital data corresponding to an X^{th} pixel, A(1) comprises digital data of the first pixel, and F(X) comprises digital data captured during the scanning operation including pixels captured by the light-sensing cell.

17. (New) An article comprising: a storage medium having stored thereon instructions, that, if executed, result in performance of a method comprising:

scanning an object using a stagger sensor;

retrieving reference digital data; and

calculating a computed pixel value using at least in part the retrieved reference digital data and data captured by the scanning operation.

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18. (New) The article of claim 17, wherein scanning an object using a stagger sensor comprises scanning the object using a stagger sensor including a plurality of scanning modules, the plurality of scanning modules including a plurality of light-sensing cells.

19. (New) The article of claim 18, wherein calculating a computed pixel value further includes: if a first light-sensing cell of a first sensing module includes a reference digital data and a second light-sensing cell of a second sensing module and the first light-sensing cell ~~has~~ having some overlap~~ping~~ in a forward scanning direction, digital data of a pixel in the region in the second light-sensing cell having substantially no overlap with the first light-sensing cell is obtained substantially in accordance with the following relationship:

$A(X)=F(X)*N-A(X-1)-A(X-2)-\ldots-A(0)*(N-X)$ where X comprises a desired pixel, N comprises a number of pixels included in a light-sensing cell, A(X) comprises digital data corresponding to an X^{th} pixel, A(1) comprises digital data of the first pixel, and F(X) comprises digital data captured during the scanning operation including pixels captured by the light-sensing cell.

20. (New) The article of claim 18, wherein calculating a computed pixel value further includes: if a first light-sensing cell of a first sensing module includes no reference digital data and a second light-sensing cell of a second sensing module and the first light-sensing cell has some overlapping in a forward scanning direction, the digital data of the pixel scanned by the second light-sensing cell including substantially no overlap with the first light-sensing cell is obtained substantially in accordance with the following relationship:

$A(X)=F(X)*N-A(X-1)-A(X-2)-\ldots-A(X-N+1)$, where X comprises a desired pixel, N comprises a number of pixels included in a light-sensing cell, A(X) comprises digital data corresponding to an X^{th} pixel, A(1) comprises digital data of the first pixel, and F(X) comprises

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digital data captured during the scanning operation including pixels captured by the light-sensing cell.

21. (New) The article of claim 19, wherein digital data in the overlapping region between the second light-sensing cell and the first light-sensing cell includes substantially identical digital data.

22. (New) The article of claim 17, wherein reference digital data includes digital data obtained from light-sensing cells in the sensing module.

23. (New) The article of claim 17, wherein a sensing module inside the stagger sensor has a slight shift in position relative to another sensing module.

24. (New) The article of claim 17, wherein the stagger sensor includes sensing modules positioned substantially in parallel to an axis, wherein a first sensing module includes a first light-sensing cell and a second sensing module includes a second light-sensing cell, the first and second light-sensing cells having a first end at a first position along the ~~long~~ axis ~~but each has a second end on a vertical line in~~ and the first sensing module having second end at a different position along the axis than a second end of the second sensing module.

25. (New) An apparatus, comprising:

a scanner adapted to perform the method of claim 1 during operation.

26. (New) An apparatus, comprising:

a scanner adapted to perform the method of claim 8 during operation.

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27. (New) A system, comprising:

a plurality of optical sensors, wherein one or more of the plurality of optical sensors comprises a staggered sensor, the staggered sensor including sensing modules positioned substantially in parallel to an axis, wherein a first light-sensing cell of a first sensing module and a second light-sensing cell of a second sensing module include a first end at substantially the same position along the axis and wherein the first light-sensing cell has a second end in a different position along the axis than a second end of the second light-sensing cell.

28. (New) The system of claim 27, wherein the first light-sensing cell includes a width along the axis greater than any other light-sensing cell in the first sensing module.

29. (New) The system of claim 27, wherein the first light-sensing cell includes a width along the axis smaller than any other light-sensing cell in the first sensing module.

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